CHROMATOGRAPHY SYRINGES

Chromatography Syringes & Accessories

HAMILTON
THE MEASURE OF EXCELLENCE™

The Measure of Excellence

Highest Quality Materials. From our pioneering efforts in designing and producing the first precision MICROLITER™ syringe, we have manufactured our products from the finest materials and have controlled the processes with the same meticulous care and attention to detail that have become the hallmark of Hamilton products.

Unsurpassed Accuracy and Precision. Every syringe is subjected to extensive quality control procedures and tested to ensure that we meet the high expectations of precision and accuracy that you have come to expect from all Hamilton products.

Hamilton has added chromatography accessories to its vast syringe and HPLC column lines. We now offer GC liners, ferrules, septa, vials, gas purification, tubing and fittings that have the same quality you have relied on from Hamilton syringes.

Syringe Selection Guide

700 Series MICROLITER™ Syringes
5 – 500 µL

Hamilton started with a 700 series syringe, our standard liquid handling syringe. The plunger is individually fitted to the glass barrel. Plungers and barrels are not interchangeable. For use with liquids.

800 Series MICROLITER™ Syringes
5 – 250 µL

These syringes are durable and have a reinforced plunger with a plunger stop, which prevents plunger blow-out. The plunger is individually fitted to the glass barrel. Plungers and barrels are not interchangeable. For use with liquids.

7000 Series MODIFIED MICROLITER™ Syringes
0.5 – 5.0 µL

These positive displacement syringes have a tungsten plunger wire that travels inside the needle. The needle acts as the syringe barrel and with no dead volume. The plunger wire and needle are replaceable.
For use with liquids.

1700 Series GASTIGHT® Syringes
10 – 500 µL

These syringes have a precision-machined TEFLON® PTFE plunger tip that creates a leak-free seal. The plungers are replaceable. For use with gases or liquids.

1800 Series GASTIGHT® Syringes
10 – 250 µL

These syringes are durable and have a reinforced plunger with a plunger stop, which prevents plunger blow-out. Replaceable syringe barrels and plungers. For use with gases or liquids.

1000 Series GASTIGHT® Syringes
1 mL – 100 mL

These syringes have a precision-machined TEFLON® PTFE plunger tip that creates a leak-free seal. The plungers are replaceable.
For use with liquids or gases.

GC Syringes for Manual Injection

7000 Series MODIFIED MICROLITER™ Syringes
0.5 µL - 5 µL

Model	Volume	Gauge/Length/ Point Style	Cemented Needle (N)	Removable Needle (RN)	(Pack of Six) Replacement Needles (RN)
7000.5KH	0.5 µL	(25/2.75"/2)		86259	17887*
7001KH	1 µL	(25s/2.75"/2)		80135	17888*
7101KH	1 µL	(22s/2.75"/2)		86211	17890*
7002KH	2 µL	(25/2.75"/2)		88411	17891*
7102KH	2 µL	(23/2.75"/2)		8851	
7105KH	5 µL	(24/2.75"/2)		88011	17893*

700 Series MICROLITER™ Syringes
5 µL - 500 µL

75	5 µL	(26s/2"/2)	87900	87930	7758-02
701	10 µL	(26s/2"/2)	80300	80330	7758-02
701N	10 µL	(26s/2"/5)	80339		
702	25 µL	(22s/2"/2)	80400	80430	7758-03
705	50 µL	(22s/2"/2)	80500	80530	7758-03
710	100 µL	(22s/2"/2)	80600	80630	7758-03
725	250 µL	(22s/2"/2)	80700	80730	7779-03
750	500 µL	(22/2"/2)	80800	80830	7779-01

701 Six Packs

Model	Volume	Gauge/Length/ Point Style	Cemented Needle (N)	Removable Needle (RN)	(Pack of Six) Replacement Needle (RN)
701	10 µL	(26s/2"/2)	80366	80336	7758-02

800 Series MICROLITER™ Syringes
5 µL - 250 µL

Model	Volume	Gauge/Length/ Point Style	Cemented Needle (N)	Removable Needle (RN)	(Pack of Six) Replacement Needle (RN)
85	5 µL	(26s/2"/2)	84850	84851	7758-02
801	10 µL	(26s/2"/2)	84852	84853	7758-02
802	25 µL	(22s/2"/2)	84854	84855	7758-03
805	50 µL	(22s/2"/2)	84856	84857	7758-03
810	100 µL	(22s/2"/2)	84858	84859	7758-03
825	250 µL	(22s/2"/2)		84861	7779-03

*Includes one needle, ferrule, plunger wire and instruction sheet.

1700 Series GASTIGHT® Syringes
10 µL - 500 µL

Model	Volume	Gauge/Length/ Point Style	Cemented Needle (N)	Removable Needle (RN)	(Pack of Six) Replacement Needle (RN)
1701	10 µL	(26s/2"/2)	80000	80030	7758-02
1701N	10 µL	(26s/2"/5)	80039		
1702	25 µL	(22s/2"/2)	80200	80230	7758-03
1705	50 µL	(22s/2"/2)	80900	80930	7758-03
1710	100 µL	(22s/2"/2)	81000	81030	7758-03
1725	250 µL	(22s/2"/2)	81100	81130	7779-03
1750	500 µL	(22/2"/2)	81217	81230	7779-01

1800 Series GASTIGHT® Syringes
10 µL - 250 µL

1801	10 µL	(26s/2"/2)	84875	84877	7758-02
1802	25 µL	(22s/2"/2)	84878	84880	7758-03
1805	50 µL	(22s/2"/2)	84881	84883	7758-03
1810	100 µL	(22s/2"/2)	84884	84886	7758-03
1825	250 µL	(22s/2"/2)	84887	84889	7779-03

Syringes for On-Column GC Injection

Syringes for 0.20 - 0.25 mm I.D. Capillary Columns

Fused Silica Needle Syringes

Model	Volume	O.D./Length/ Point Style	Removable Needle (RN)	Replacement Needle, 1/pk
701RNFS	10 µL	(0.17 mm/100 mm/3)	87402	17737
701RNFS	10 µL	(0.17 mm/115 mm/3)	80331	17076
1701RNFS	10 µL	(0.17 mm/100 mm/3)	87404	17737
1801RNFS	10 µL	(0.17 mm/100 mm/3)	87405	17076
Ferrule for 0.17 mm O.D. Needle	RNFS	30947		

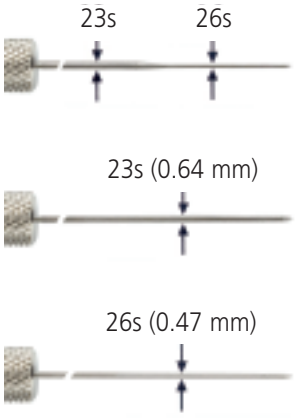
Syringes for 0.28 - 0.35 mm I.D. Capillary Columns

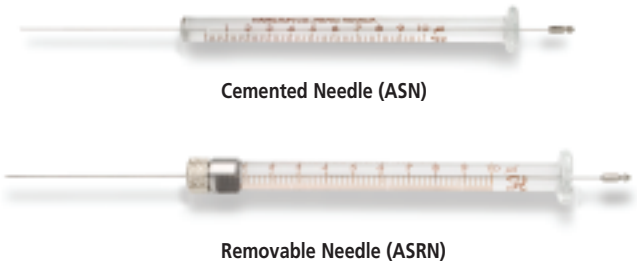
Stainless Steel Needle Syringes

7000.5OC	0.5 µL	(0.23 mm/100 mm/3)	86257	86258**
701SN	10 µL	(0.23 mm/75 mm/3)	80351	
701RN	10 µL	(0.23 mm/125 mm/2)	80386	7803-04*

* Specify 125 mm length and point style 2. 6/pk.
** Includes needle, ferrule, plunger wire and instruction sheet.

GC Syringes for Agilent/HP Autosamplers





Cemented Needle (ASN)

Removable Needle (ASRN)

Syringes for Agilent/HP 7673 - 7683 Autosamplers

MODIFIED MICROLITER™ Syringes

Model	Volume	Gauge/ Length/ Point Style	ASN (N) Autosampler Cemented Needle 23s	26s	23s-26s	ASRN (RN) Autosampler Removable Needle 23s	26s	23s-26s
7000.5	0.5 µL	(x/1.71"/AS)				86276	86274	
7001	1 µL	(x/1.71"/AS)				80176	80175	

MICROLITER™ Syringes

75	5 µL	(x/1.71"/AS)	87987	87988	87993	87957	87958	87959
75	5 µL 6/pk	(x/1.71"/AS)	87990	87989	87994			
75	5 µL	(x/1.71"/2)	87991	87992				
701	10 µL	(x/1.71"/AS)	80387	80388	80393	80357	80358	80359
701	10 µL 6/pk	(x/1.71"/AS)	80390	80389	80391			
701	10 µL	(x/1.71"/2)	80398	80399				

GASTIGHT® Syringes

175	5 µL	(x/1.71"/AS)	80074		80076			80086
175	5 µL 6/pk	(x/1.71"/AS)	80090		80092			
1701	10 µL	(x/1.71"/AS)	80080		80079	80087	80088	80089
1701	10 µL 6/pk	(x/1.71"/AS)	80094		80096			

Replacement Needles for Agilent/HP 7673-7683 Autosampler Syringes		23s	26s	23s-26s
0.5 µL	(x/1.71"/AS)		38063*	
5 & 10 µL	(x/1.71"/AS)	7786-01	7786-02	7785-01

Syringes for Agilent/HP 7670, 7671, 7672 Autosamplers

Model	Volume	Gauge/Length Point Style	Cemented Needle (N)	Removable Needle (RN)	Replacement Needles, 6/pk
75	5 µL	(26s/2"/2)	87900		
701	10 µL	(26s/2"/2)	80300	80338	7758-02
701	10 µL 6/pk	(26s/2"/2)	80366		
1701	10 µL	(26s/2"/2)	80000	80011	7758-02

* Includes needle, ferrule, plunger wire and instruction sheet.

Inlet Liners for Agilent/HP GCs

Split Liners for Agilent

	Description	Uses	Part # 1/pk	5/pk	25/pk
	4.0 mm with glass wool	Universal use with 7673 autosampler	50800-60	50800-61	50800-62
	4.0 mm cup with fused silica wool	High and low molecular weight compounds	50800-10	50800-11	50800-12
	4.0 mm cup	High and low molecular weight compounds	50800-05	50800-06	50800-07
	4.0 mm Mini-Lam cup	High molecular weight compounds	50800-00	50800-01	50800-02
	4.0 mm cup with OV-1		50800-15	50800-16	50800-17
	4.0 mm Laminar cup	High molecular weight compounds	50800-65	50800-66	50800-67
	2.0 mm with glass wool	Dirty samples or trace analysis	50800-95	50800-96	50800-97

Splitless Liners for Agilent

	Description	Uses	Part # 1/pk	5/pk	25/pk
	4.0 mm with glass wool	Trace samples, >2 µl	50800-35	50800-36	50800-37
	4.0 mm gooseneck with glass wool	Trace samples, >2 µl	50800-50	50800-51	50800-52
	2.0 mm with glass wool	Trace samples, <2 µl	50800-25	50800-26	50800-27
	2.0 mm gooseneck	Trace samples, <2 µl	50800-40	50800-41	50800-42
	4.0 mm double gooseneck	Trace samples, <2 µl	50800-70	50800-71	50800-72
	4.0 mm	Trace samples, >2 µl	50800-30	50800-31	50800-32
	2.0 mm	Trace samples, <2 µl	50800-20	50800-21	50800-22
	4.0 mm single gooseneck	Trace samples, >2 µl	50800-45	50800-46	50800-47
	4.0 mm gooseneck with fused silica wool	Trace samples, >2 µl	50800-55	50800-56	50800-57
	2.0 mm recessed gooseneck	Dirty samples, easily packs with glass wool, <2 µl	50800-80	50800-81	50800-82
	4.0 mm recessed gooseneck	Dirty samples, easily packs with glass wool, >2 µl	50800-75	50800-76	50800-77
	4.0 mm recessed double gooseneck	Dirty samples, easily packs with glass wool, >2 µl	50800-90	50800-91	50800-92
	4.0 mm recessed gooseneck with fused silica wool	Dirty samples, >2 µl	50800-85	50800-86	50800-87

GC Syringes for CTC Autosamplers

MODIFIED MICROLITER™ Syringes

Model	Volume	Gauge/ Point Style	Part #	Replacement Plunger Assembly
7701.2N	1.2 µL	(26/AS)	203185	
7702N	2 µL	(26/AS)	202960	

MICROLITER™ Syringes

75N	5 µL	(26s/AS)	203189	
75N	5 µL	(*/*)	203197*	
701N	10 µL	(23s/AS)	203361	
701N	10 µL	(23s-26s/AS)	203362	
701N	10 µL	(23s/2)	203363	
701N	10 µL	(*/*)	203198*	
701N Slim Line	10 µL	(26s/2)	203072	
701N	10 µL	(26s/AS)	203205	

GASTIGHT® Syringes

1701SN	10 µL	(*/*)	203206*	203229 1/pk, 203239 10/pk
1702N	25 µL	(26s/AS)	203043	203045 1/pk, 203245 10/pk
1702N Slim Line**	25 µL	(26s/AS)	203074	203045 1/pk, 203245 10/pk
1702SN Slim Line**	25 µL	(*/*)	203275*	203045 1/pk, 203245 10/pk
1702SN	25 µL	(*/*)	203209*	203045 1/pk, 203245 10/pk
1710N Slim Line**	100 µL	(26s/AS)	203076	203096 1/pk, 203246 10/pk
1710RN Slim Line**	100 µL	(Needle not Included)	202668	203096 1/pk, 203246 10/pk
1710SN	100 µL	(*/*)	203226*	203096 1/pk, 203246 10/pk
1725N	250 µL	(26s/AS)	203078	203098 1/pk, 203249 10/pk
1725SN	250 µL	(*/*)	203219*	203098 1/pk, 203249 10/pk
1750N	500 µL	(26s/AS)	203080	203061 1/pk, 203254 10/pk
1750SN	500 µL	(*/*)	203225*	203061 1/pk, 203254 10/pk

Headspace Syringes for COMBI-PAL Instruments
GASTIGHT® Syringes

1001N	1 mL	(23/5)	203082	203255 1/pk
1001N	1 mL	(26/5)	203141	203255 1/pk
1002N	2.5 mL	(23/5)	203084	203256 1/pk
1002N	2.5 mL	(26/5)	203181	203256 1/pk
1005N	5 mL	(23/5)	203086	203259 1/pk
1005N	5 mL	(26/5)	203182	203259 1/pk

* Custom needle syringes – Specify needle gauge and point style. Allow 6-8 weeks for delivery. CTC syringes have a fixed total length.
** The barrel O.D. is 6.7 mm. All other 25 µl and 100 µl syringes have a 7.9 mm O.D.

GC Autosampler Syringes (Other Manufacturers)

Syringes for Varian/Chrompack GC Autosamplers

CP-8400/8410
CP-9010/9050

Model	Volume	Gauge/Length/ Point Style	Part #	Replacement Needles, 6/pk
75N	5 µL	(26s/2″/2)	87900	
701N	10 µL	(23s/2″/AS)	80342	
701N	10 µL	(26s/2″/2)	80300	
701N 6/pk	10 µL	(26s/2″/2)	80366	
701RN	10 µL	(26s/2″/2)	80338	7758-02
1701N	10 µL	(26s/2″/2)	80000	
CP-9020/9025				
1002LTN	2.5 mL	(22/2″/5)	202660	

Syringes for Shimadzu GC Autosamplers

AOC-9

Model	Volume	Gauge/Length/ Point Style	Part #	Replacement Needles, 6/pk
75RN	5 µL	(26s/2″/2)	87930	7758-02
701RN	10 µL	(26s/2″/2)	80330	7758-02
AOC-14/17/20				
75RN	5 µL	(Needle not included)	7634-01	7786-02
701RN	10 µL	(Needle not included)	7635-01	7786-021
701N	10 µL	(23s/1.7″/AS)	80395	

Syringes for Perkin-Elmer® AutoSystem™ GC Autosamplers

AutoSystem™ GC

Model	Volume	Gauge/Length/ Point Style	Part #
75ASN/PE	5 µL	(0.47 mm/2.756″/3)	88040
75ASN/PE	5 µL	(0.63 mm/2.756″/3)	88035

Syringes for ThermoFinnigan GC Autosamplers

HS 250/500/800

Model	Volume	Gauge/Length/ Point Style	Part #
1002LTN HS 22	2.5 mL	(22/2″/5)	202660
AS800/2000			
701SN	10 µL	(26s/3.15″/AS)	80318
AI/AS 3000			
75SN	5 µL	(26s/1.97″/2)	204000
701SN	10 µL	(26s/1.97″/2)	204001
75SN	5 µL	(26s/1.97″/AS)	204051
701SN	10 µL	(26s/1.97″/AS)	204052

GC Accessories

Inlet Liners for Varian GCs and General Injector Supplies

	Description	Part # 1/pk	5/pk	25/pk
	0.5 mm SPI	50801-40	50801-41	50801-42
	0.8 mm SPI	50801-45	50801-46	50801-47
	2.0 mm Splitless	50801-10	50801-11	50801-12
	4.0 mm with glass wool, split	50801-20	50801-21	50801-22
	4.0 mm Laminar cup, split	50801-25	50801-26	50801-27
	4.0 mm Spitless	50801-30	50801-31	50801-32
	4.0 mm Frit/Split	50801-00	50801-01	50801-02
	4.0 mm Baffle split	50801-05	50801-06	50801-07
	4.0 mm Cup split	50801-15	50801-16	50801-17

Graphite GC O-rings (450° C Limit)

51623-01	1/4 (6.5 mm I.D.)	10/pk
51623-02	1/4 (6.35 mm I.D.)	10/pk

Silicone GC O-rings (230° C Limit)

51624-01	1/8"	100/pk
51624-02	3/16"	100/pk
51624-03	1/4"	100/pk

PTFE GC O-rings (230° C Limit)

51625-01	1/8"	100/pk
51625-02	3/16"	100/pk
51625-03	1/4"	100/pk

VITON GC O-rings (200° C Limit)

51626-01	1/8"	100/pk
51626-02	3/16"	100/pk
51626-03	1/4"	100/pk

Injector Supplies for HP/Agilent 5890/6890 GCs

51628-01	Inlet Seal, Stainless steel (0.8 mm hole), 1/pk
51628-02	Inlet Seal, Stainless steel (0.8 mm hole), 10/pk
51628-03	Inlet Seal, Gold plated (0.8 mm hole), 1/pk
51628-04	Inlet Seal, Gold plated (0.8 mm hole), 10/pk
51629-01	Reducing Nut (replacement for 5890/6890), 1/pk
51630-01	Washers, Stainless steel (0.375" O.D.), 10/pk
51630-02	MSD Source Nut, brass

GC Tools

Injection Port Cleaning Kit	51622-01
Injection Liner Cleaning Kit	51622-02
FID Cleaning Kit	51622-03

GC Septa

Low Bleed, High Temperature Septa

Low Bleed, High Temperature septa are designed for maximum GC/MS performance for the lowest bleed possible at temperatures up to 400°C. Ideal for use with Mass Spectrometers or in applications where septa bleed interferes with trace analysis. The 5, 9, 11 and 11.5 mm diameter septa are available with a center depression. It guides the syringe needle to the same injection point, extending septa life and reducing needle bending. All of the Low Bleed, High Temperature Septa can be used at temperatures up to 400°C.

Part #	Description
75840	5 mm diameter septa for Agilent on-column injector port (with center depression), 50/pk
75834	9 mm diameter septa (with center depression), 50/pk
75833	9.5 mm diameter septa (no center depression), 50/pk
75838	10 mm diameter septa (no center depression), 50/pk
75835	11 mm diameter septa (with center depression), 50/pk
75839	11.5 mm diameter septa (with center depression), 50/pk
75836	12.7 mm diameter septa (no center depression), 50/pk
75841	17 mm diameter septa (no center depression), 50/pk
75837	Plug style septa for Shimadzu instruments, 50/pk

Long Life, GC Autosampler Septa

Long Life, GC Autosampler Septa are designed for use with GC autosamplers. The 5, 9, 11 and 11.5 mm diameter Long Life septa have a prepierced center depression. It guides the syringe needle to the same injection point, extending septa life and reducing needle bending.

Part #	Description
75829	5 mm diameter septa for Agilent on-column injector port (with center depression), 25/pk
75831	9 mm diameter septa (with center depression), 25/pk
75825	9.5 mm diameter septa (no center depression), 25/pk
75826	11 mm diameter septa for (with center depression), 25/pk
75832	11.5 mm diameter septa for (with center depression), 25/pk
75827	12.7 mm diameter septa (no center depression), 25/pk
75830	17 mm diameter septa (no center depression), 25/pk
75828	Plug style septa for Shimadzu instruments, 25/pk

Ferrules for Capillary GC Columns

Vespel®/Graphite ferrules are made from 60%/40% and 85%/15% high-temperature DuPont polyimide. The one-piece design does not require back ferrules. Preconditioned ferrules are recommended for GC/MS interface applications. Vespel®/Graphite ferrules are reusable. The upper temperature limit is 400° C.

All ferrules sold in packages of 10.

60% Vespel®/40% Graphite Ferrules

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51372-01	1/16" fitting to 0.3 mm	0.3	100
51372-02	1/16" fitting to 0.4 mm	0.4	250
51372-03	1/16" fitting to 0.5 mm	0.5	320
51372-04	1/16" fitting to 0.8 mm	0.8	530

Preconditioned, 60% Vespel®/40% Graphite Ferrules

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51223-01	1/16" fitting to 0.3 mm	0.3	100
51223-02	1/16" fitting to 0.4 mm	0.4	250
51223-03	1/16" fitting to 0.5 mm	0.5	320
51223-04	1/16" fitting to 0.8 mm	0.8	530

Short 60% Vespel®/40% Graphite Ferrules for Agilent/HP models 4890, 5890, 6890

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51227-01	1/16" fitting to 0.4 mm	0.4	250
51227-02	1/16" fitting to 0.5 mm	0.5	320
51227-03	1/16" fitting to 0.8 mm	0.8	530

Preconditioned, Short 60% Vespel®/40% Graphite Ferrules for Agilent/HP GC/MS models 4890, 5890, 6890

Part Number	Description	Ferrule I.D., mm	Column I.D., µm
51228-01	1/16" fitting to 0.4 mm	0.4	250
51228-02	1/16" fitting to 0.5 mm	0.5	320
51228-03	1/16" fitting to 0.8 mm	0.8	530

60% Vespel®/40% Graphite Ferrules

Part #	Description
51545-01	Straight Ferrules - for tubing with 1/8" O.D.
51545-02	Straight Ferrules - for tubing with 1/4" O.D.

85% Vespel®/15% Graphite Ferrules

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51229-01	1/16" fitting to 0.3 mm	0.3	100
51229-02	1/16" fitting to 0.4 mm	0.4	250
51229-03	1/16" fitting to 0.5 mm	0.5	320
51229-04	1/16" fitting to 0.8 mm	0.8	530

Preconditioned, 85% Vespel®/15% Graphite Ferrules

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51230-01	1/16" fitting to 0.3 mm	0.3	100
51230-02	1/16" fitting to 0.4 mm	0.4	250
51230-03	1/16" fitting to 0.5 mm	0.5	320
51230-04	1/16" fitting to 0.8 mm	0.8	530

Short 85% Vespel®/15% Graphite Ferrules for Agilent/HP models 4890, 5890, 6890

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51231-01	1/16" fitting to 0.4 mm	0.4	250
51231-02	1/16" fitting to 0.5 mm	0.5	320
51231-03	1/16" fitting to 0.8mm	0.8	530

Preconditioned Short 85% Vespel®/15% Graphite Ferrules for Agilent/HP GC/MS models 4890, 5890, 6890

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51232-01	1/16" fitting to 0.4 mm	0.4	250
51232-02	1/16" fitting to 0.5 mm	0.5	320
51232-03	1/16" fitting to 0.8 mm	0.8	530

Short Graphite Ferrules for Agilent/HP models 4890, 5890, 6890

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51236-01	1/16" fitting to 0.4 mm	0.4	100-250
51236-02	1/16" fitting to 0.5 mm	0.5	320
51236-03	1/16" fitting to 0.8 mm	0.8	530

Ferrules for ThermoFinnigan

Part #	Description	Ferrule I.D., mm
51543-01	Graphite Cup Ferrules for ThermoFinnigan (M4 Nut)	0.25
51543-02	Graphite Cup Ferrules for ThermoFinnigan (M4 Nut)	0.35
51543-03	Graphite Cup Ferrules for ThermoFinnigan (M4 Nut)	0.45
51543-04	Graphite Cup Ferrules for ThermoFinnigan (M4 Nut)	0.80

Vespel® ferrules are made from 100% DuPont polyimide. The ferrules have a precision-drilled inner diameter. The one-piece design does not require back ferrules. The upper temperature limit is 350° C.

VESPEL® Ferrules

Part #	Description
51544-01	Straight Ferrules - for tubing with 1/8" O.D.
51544-02	Straight Ferrules - for tubing with 1/4" O.D.

Graphite ferrules are made from 100% high-purity graphite. The ferrules are precision formed with a flash-free inner diameter and are reusable. The one-piece design does not require back ferrules. The upper temperature limit is 450° C.

Graphite Ferrules

Part #	Description	Ferrule I.D., mm	Column I.D., µm
51235-02	1/16" fitting to 0.4 mm	0.4	100-250
51235-03	1/16" fitting to 0.5 mm	0.5	320
51235-04	1/16" fitting to 0.8 mm	0.8	530

Gas Purification Systems

The Gas Purification System consists of three cartridges, in series, to remove oxygen, sulfur compounds, moisture and non-methane hydrocarbons. The capacity is 18 cylinders of standard grade (99.997% pure) laboratory helium.

The first, all-welded, stainless steel cartridge provides highly efficient removal of residual water and non-methane hydrocarbons from the carrier gas stream. The second cartridge provides high-capacity oxygen removal to an output level of less than 1 ppb. The last cartridge contains an inorganic indicator, which changes color from bright green to gray when it adsorbs oxygen. When it turns gray, the adsorbent is depleted.

The system can be wall-mounted or bench-mounted. Cartridges can be regenerated once they are depleted. Remove and replace the cartridges, when the cartridges are depleted or annually, if gas use is low.

Part #	Description
51616-01	Gas Purification System, 1/8"
51616-02	Gas Purification System, 1/4"
51616-03	Replacement Cartridge Set

All-In-One (HC,H_2O,O_2) Gas Purification System

One cartridge contains adsorbents to remove oxygen, moisture and non-methane hydrocarbons. Capacity is 450 cc oxygen at STP to an outlet of 1 ppb; 13 g water to <0.1 ppm outlet, and 5 g hydrocarbons as n-butane, or a total of 8,292 cu. ft. tanks of 99.997% pure helium. The cartridge may be easily replaced, and regeneration service is available.

Part #	Description
51617-01	All-In-One Gas Purification System, 1/8" Fittings
51617-02	All-In-One Gas Purification System, 1/4" Fittings
51617-03	Replacement Cartridge, All-In-One Purifier

Oxygen Traps

The oxygen trap provides a long-term protection of capillary column stationary phases against oxidation at GC operating temperatures. It is also recommended for packed column carrier gases. Model 1000, our highest capacity oxygen trap has a capacity of 2.5 L of oxygen at room temperature. It also removes sulfur compounds, such as hydrogen sulfide and mercaptans. Model 1000 is intended for use with non-oxidizing gases, such as: He, Ar, N_2, H_2 or CH_4, containing less than 1% oxygen. It removes oxygen to below 10 ppb from these gases.

The oxygen trap is a high-pressure metal cylinder filled with 500 cc of active oxygen adsorbent. It binds covalently with oxygen (no gas is generated from this reaction).

Regeneration: can be regenerated numerous times using high-temperature treatment with hydrogen (sulfur compounds permanently damage the adsorbent)
Maximum flow rate for nominal pressure drop: 1 L/min
Maximum pressure: 1000 psig
Approximate dimensions: 2" x 14" (including the fittings)
Weight: 3 lbs.

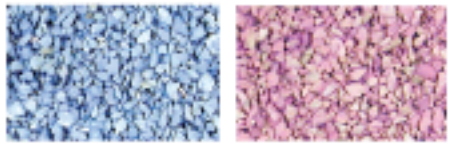
Part #	Description
51618-01	Model 1000 Oxygen Trap, 1/8" Fittings
51618-02	Model 1000 Oxygen Trap, 1/4" Fittings

Gas-Dry Filter Traps

This trap contains 120 cc total volume of indicating Drierite® and molecular sieve 5A in a clear acrylic tube. The Drierite® changes from blue to pink at 5% relative humidity. Easily remove the cartridge, by hand, without disconnecting the fittings from the line.

Maximum pressure: 100 psig

Part #	Description
51619-01	Gas-Dry Filter Trap, Indicating Drierite®, 1/8" Fittings
51619-02	Gas-Dry Filter Trap, Indicating Drierite®, 1/4" Fittings

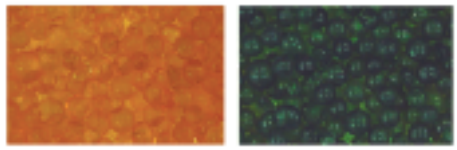


Gas-Dry Filter Traps

This trap contains 120 cc total volume of cobalt-free CoFree™ indicator and molecular sieve 5A in a clear acrylic tube. The CoFree™ changes from yellow to green at low relative humidity. Easily remove the cartridge, by hand, without disconnecting the fittings from the line.

Maximum pressure: 100 psig

Part #	Description
51620-01	Gas-Dry Filter Trap, Indicating CoFree™, 1/8" Fittings
51620-02	Gas-Dry Filter Trap, Indicating CoFree™, 1/4" Fittings



Safe Glass Moisture Trap

This filter is for use with GC detectors requiring high purity gases such as: electron capture or Hall electrolytic conductivity. Gas contacts only glass, metal and the adsorbents for purity. The trap can be used in any orientation. An internal screen on each end prevents particulate contamination. The Safe Glass Trap is enclosed in a plastic outer sheath, which can be removed to reactivate the inner glass tube. It contains 55 cc total adsorbents.

Maximum pressure: 100 psig

Part #	Description
51621-01	Safe Glass Moisture Trap, 1/8" Fittings
51621-02	Safe Glass Moisture Trap, 1/4" Fittings

HPLC Syringes for Manual Injection

Syringes for Rheodyne and Valco™ Injectors

Volume	Gauge/ Length/ Point Style	Rheodyne and Valco™ VISF-2 Injectors: MICROLITER™ Syringes 600 Series	MICROLITER™ Syringes 700 Series	GASTIGHT® Syringes 1700 (N)	GASTIGHT® Syringes 1700 (RN)	Replacement Needles RN 6/pk	Valco™ VISF-1 Injectors: Gauge/ Length/ Point Style	RNCP Syringe	Replacement Needles RN, 6/pk
2.5 µL	(22s/2"/3)	87942				7770-01			
5 µL	(22s/2"/3)	87943				7770-01			
10 µL	(22s/2"/3)		80365	80075	80065				
25 µL	(22s/2"/3)		80465	80275	80265	7770-01	(22s/0.75"/3)	80231	7787-01
50 µL	(22s/2"/3)		80565	80975	80965	7770-01	(22s/0.75"/3)	81931	7787-01
100 µL	(22s/2"/3)		80665	81075	81065	7770-01	(22s/0.75"/3)	81031	7787-01
250 µL	(22/2"/3)		80765	81175*	81165	7780-04	(22s/0.75"/3)	81131	7787-02
500 µL	(22/2"/3)		80865	81216	81265	7780-04	(22s/0.75"/3)	81231	7787-02
1 mL	(22/2"/3)			81316	81365	7780-04	(22/0.75"/3)	81331	7787-02
2.5 mL				81414***	7650-01**	7780-04	(22/0.75"/3)	81431	7787-02
5 mL				81514***	7651-01**	7780-04	(22/0.75"/3)	81531	7787-02
10 mL				81614***	7652-01**	7780-04	(22/0.75"/3)	81631	7787-02

* This syringe has a 22s gauge needle (22s/2"/3).
** (RN) Syringe without needle. Use RN Needle part number 7780-04
*** (N) Custom Needle Syringe. Specify gauge, length and point style.

Syringes for the WATERS® U6K Injection Valve

Volume	Gauge/ Length/ Point Style	MICROLITER™ Syringe 800 Series	GASTIGHT® Syringe 1700 RN	GASTIGHT® Syringe 1800 (RN)	Replacement Needle RN, 6/pk
10 µL	(25s/1.97"/3)	84815			8647-01
25 µL	(25s/1.97"/3)	84816	80238	84980	8647-01
50 µL	(25s/1.97"/3)	84817	80938	84983	8647-01
100 µL	(25s/1.97"/3)	81818	81038	84986	8647-01
250 µL	(25s/1.97"/3)	81819	81138	84989	8648-01

MULTI-PAK™ for the WATERS® U6K Injection Valve

Includes: One handle, a selection of 800 Series syringe barrel/plunger combinations for 10, 25, 50, 100 and 250 µL volumes, a RN nut and two 6-packs of needles.

Part # 84981

Priming Syringe for WATERS® HPLC Pumps

Part #	Description
81610	10 mL 1010W
90609	TEFLON® tubing assembly used for priming

HPLC Syringes for CTC Autosamplers

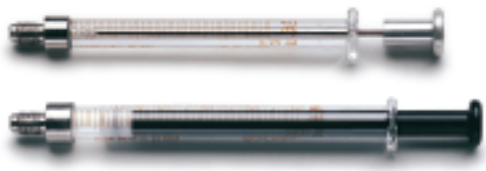
Model	Volume	Gauge/ Point Style	Part #	Replacement Plunger Assembly
701N	10 µL	(22s/3)	203073	
1701N	10 µL	(22s/3)	203194	203229 1/pk, 203239 10/pk
1701N	10 µL	(*/*)	203206*	203229 1/pk, 203239 10/pk
1702N	25 µL	(22s/3)	203075	203045 1/pk, 203245 10/pk
1702N	25 µL	(*/*)	203209*	203045 1/pk, 203245 10/pk
1702N Slim Line**	25 µL	(22s/3)	203274	203045 1/pk, 203245 10/pk
1702N Slim Line**	25 µL	(*/*)	203275*	203045 1/pk, 203245 10/pk
1710N Slim Line**	100 µL	(22s/3)	203077	203096 1/pk, 203246 10/pk
1710N	100 µL	(22/3)	203235	203096 1/pk, 203246 10/pk
1710N	100 µL	(*/*)	203226*	203096 1/pk, 203246 10/pk
1710RN Slim Line**	100 µL	(needle not included)	202668	203096 1/pk, 203246 10/pk
1725N	250 µL	(22/3)	203079	203098 1/pk, 203249 10/pk
1725N	250 µL	(*/*)	203219*	203098 1/pk, 203249 10/pk
1750N	500 µL	(22/3)	203349	203061 1/pk, 203254 10/pk
1750N	500 µL	(*/*)	203225*	203061 1/pk, 203254 10/pk
1001N	1 mL	(22/3)	203081	203255 1/pk
1002N	2.5 mL	(22/3)	203083	203256 1/pk
1005N	5 mL	(22/3)	203085	203066 1/pk
1701N	10 µL	(22s/3)	203560	203562 10/pk
1702N	25 µL	(22s/3)	203563	203565 10/pk
1710N	100 µL	(22s/3)	203566	203569 10/pk

* Custom needle syringes - Specify needle gauge and point style. Allow 6-8 weeks for delivery. CTC Syringes have a fixed total length.
** The barrel O.D. is 6.7 mm. All other 25 µl and 100 µl syringes have a 7.9 mm O.D.

HPLC Autosampler Syringes

Syringes for Perkin-Elmer® Series 200 HPLC Autosamplers

Part #	Volume	Model
80962	50 µL	1705CX
81162	250 µL	1725CX
81262	500 µL	1750CX
81360	1.0 mL	1001C
81460	2.5 mL	1002C



Syringes for DIONEX ASI-100 HPLC Autosamplers

Part #	Volume	Model
7654-01	25 µL	1702RN (needle not included)
7657-01	250 µL	1725RN (needle not included)

Syringes for Hitachi L7200/7250, AS1000/2000/42000 and La Chrom HPLC Autosamplers

Part #	Volume	Model
0160310	500 µL	1750 Special

Syringes for Spectra-Physics/ThermoFinnigan HPLC Autosamplers

Part #	Volume	Model
SP8780/8875/8880		
81260	500 µL	1750C
81460	2.5 mL	1002C
AS100/300 AS1000/3000/3500		
81160	250 µL	1725C
81260	500 µL	1750C
81360	1 mL	1001C
81460	2.5 mL	1002C

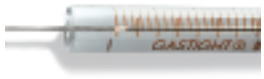
Syringes for WATERS® WISP® HPLC Autosamplers

Part #	Volume	Model	Use
80020	25 µL	1702 WISP	WISP Autosampler
80024	250 µL	1725 WISP	WISP Autosampler
81610	10 mL	1010W	Manual Priming Syringe for Waters Pumps

Syringe Terminations

Syringe terminations are offered in a number of different configurations designed to accommodate a broad range of applications. From cemented to removable needles, and luer taper/TEFLON® luer lock to special syringe fittings, syringe barrel terminations serve a key function at the interface of a syringe and its mating connection.

N, Cemented Needle
Needles are cemented into the glass syringe barrel at a point corresponding to the zero graduation mark; not autoclavable.



LTN, Luer Tip Cemented Needle
Needles are cemented into the glass syringe barrel at a point corresponding to the zero graduation mark; not autoclavable.

RN, Removable Needle
Removable needles seat precisely to the zero graduation mark of the syringe; autoclavable when disassembled. Allows the use of different specification needles on the same syringe barrel.

LT, Luer Tip
Ground glass syringe barrel with a male luer taper accepts most hypodermic needles; autoclavable when disassembled. Use Kel-F hub needles and connectors for a tight seal.

TLL, TEFLON® Luer Lock (with or without slots)
Male luer taper with nickel-plated brass hub accepts, and locks in place, luer hub needles and connectors; autoclavable when disassembled. Used with Hamilton diluters/dispensers, in OEM applications and in manual operations.

KH, Knurled Hub
Removable needle, knurled hub is used on 7000 Series syringes, exclusively; autoclavable when disassembled. Knurled hub enables 6000 psig maximum injection pressures and the attachment of a spacer for repeatable depth injections.

SL, SampleLock™
On/Off syringe valve with RN needle is cemented to a syringe barrel; not autoclavable. Used for headspace, environmental sample collection and storage, pre-pressurization of gaseous samples for GC analysis, and sample spiking.

C, Chem
1/4-28 UNF male fitting; autoclavable. Used in low volume applications where system dead volumes needs to be minimized.

Autosampler Vials and Caps

1.8 ml, 12 x 32 mm, Vials and Combo Packs

These vials are compatible with most GC and HPLC autosamplers requiring 12 x 32 mm (1.8 ml) vials. Crimp caps are made of lacquered aluminum, with an open-hole design and come pre-stuffed with the seal indicated. Combo Packs include aluminum crimp caps pre-stuffed with a seal. Vials are available in clear or amber glass. 100/pack

Combo Packs

Part #	Description
51212-02	Clear Wide Mouth Crimp Top Vial with Rubber/PTFE Seal
51212-04	Clear Standard Mouth Crimp Top Vial with Rubber/PTFE Seal
51212-06	Clear Standard Mouth Screw Top Vial with Silicone/PTFE Seal
51213-02	Amber Standard Mouth Screw Top Vial with Silicone/PTFE Seal
51213-05	Amber Standard Mouth Crimp Top Vial with Rubber/PTFE Seal

Vial Inserts

Inserts fit 1.8 ml, 12 x 32 mm vials, and are placed directly in the host vial. Flat-bottom inserts have the largest capacity. Tapered-bottom inserts allow sampling of just microliters of liquid, with nearly complete withdrawal from the tip. Tapered-bottom inserts are available with flame-drawn pulled points, or form-shaped mandrel points. TriSpring inserts have a plastic spring attached to the tapered bottom, which centers the insert in the host vial. It also adsorbs shocks if the insert is touched by the autosampler needle. 100/pack

Part #	Mouth Size	Volume	Type
51217-20	Standard	250 µL	Flat Bottom, 5x31 mm
51217-21	Standard	100 µL	TriSpring, 5x29 mm
51217-22	Wide	350 µL	Flat Bottom, 6x31 mm
51217-23	Wide	250 µL	TriSpring, 6x29 mm

15 x 45 mm Screw Top Vials for WATERS®

4 mL vials have standard dimensions to fit WISP® autosamplers. Combo Packs include open-hole polypropylene caps and PTFE/silicone seals. 100/pack

Combo Packs

Part #	Description	Recommended Cap	Seal
51214-02	Clear Screw Top Vial with Silicone/PTFE Seal		
51214-04	Amber Screw Top Vial with Silicone/PTFE Seal		
Vials Only			
51214-01	Clear Screw Top Vial Only	51217-07	
51214-03	Amber Screw Top Vial Only	51217-07	
Caps and Seals for WATERS® - 15 x 45 mm Screw Top Vials			
51217-09	Screw Cap Only, 12 mm		51217-10
			51217-11
51217-10	Silicone/PTFE Seal Only, 12 mm	51217-09	
51217-11	PTFE/Silicone/PTFE Seal Only, 12 mm	51217-09	

Headspace Vials

The standard cap is a 20 mm diameter headspace crimp cap made from lacquered aluminum. It has an open hole design and fits the 10 ml and 20 ml headspace vials. Combo packs include clear crimp top vial with Silicone/PTFE Seal. 100/pack

Part #	Description	Cap	Recommended Seal	Vial
Combo Packs				
51215-03	10 mL Clear Crimp Top Vial with Silicone/PTFE Seal			
51215-01	20 mL Clear Crimp Top Vial with Silicone/PTFE Seal			
Vials Only				
51215-04	10 mL Clear Crimp Top Vial	51217-16		
51215-02	20 mL Clear Crimp Top Vial	51217-16		
Caps and Seals for 10 ml and 20 ml Headspace Vials				
51217-12	Crimp Cap Only, 20 mm		51217-13	
			51217-14	
			51217-15	
51217-13	Silicone/PTFE Seal Only, 20 mm	51217-12		
51217-14	Butyl Septum Only, 20 mm	51217-12		
51217-15	Bellows Seal Only, 20 mm	51217-12		
51217-16	Crimp Cap with Silicone/PTFE Seal, 20 mm			51217-02
				51217-04
EPA Vials, Caps and Seals				
51215-05	40 mL Clear Screw Top Vial	51217-19		
51217-17	Screw Cap Only, 24 mm		51217-18	
51217-18	PTFE/Silicone Seal Only, 22 mm	51217-17		
51217-19	Screw Cap with Silicone/PTFE Seal, 24 mm			51217-05

Crimpers and Decappers

Rechargeable electronic crimpers or decappers can crimp or decap hundreds of vials per charge. They can be set electronically to the precise level required for reliable, reproducible crimping, and they fit comfortably in the user's hand. A battery and a charger is included with each electronic crimper or decapper.

Part #	Description	Part #	Description
51218-01	Manual Crimper, 11 mm Caps	51218-03	Manual Decapper, 11 mm Caps
51218-02	Manual Crimper, 20 mm Caps	51218-04	Manual Decapper, 20 mm Caps
51218-05	Electronic Crimper, 11 mm Caps	51218-07	Electronic Decapper, 11 mm Caps
51218-06	Electronic Crimper, 20 mm Caps	51218-08	Electronic Decapper, 20 mm Caps
51218-09	Replacement Battery		

HPLC Fittings

High Pressure One Piece Fittings

Fittings are available in standard and Slip-free™ one piece designs. Both provide reliable leak free connections on a 10-32 port. The Slip-free™ design grips the tubing and keeps it in place when changing columns.

Description	Slip-free Part #	Standard Part #
Short, Finger-tight, Black*	51347-01	51348-01
Short, Finger-tight, Natural	51347-02	51348-02
Short, Finger-tight, Green	51347-03	51348-03
Short, Finger-tight, Blue	51347-04	51348-04
Short, Finger-tight, Yellow	51347-05	51348-05
Short, Finger-tight, Red	51347-06	51348-06
Short, Finger-tight, Assorted	51347-07	51348-07

Description	Slip-free Part #	Standard Part #
Long, Finger-tight, Natural		51348-09
Long, Finger-tight, Black	51347-08	
Short, Hex Head, Black*	51347-11	51348-10
Short, Hex Head, Natural	51347-10	51348-11
Long, Hex Head, Black*	51347-13	51348-12
Long, Hex Head, Natural	51347-12	51348-13

* Carbon reinforced PEEK.

Low Pressure, 1/4-28 PEEK Connectors

Part #	Description
51352-01	0.8 mm Bore Tee
51352-02	1.5 mm Bore Tee

Part #	Description
51352-03	0.8 mm Bore Cross
51352-04	1.5 mm Bore Cross

Low Pressure, Flange Free Nut Fittings

Description	1/16" O.D. Part #	1/8" O.D. Part #
Natural, PEEK, 10/pk	51349-01	51349-09
Black, PEEK, 10/pk	51349-02	51349-10
Red, PEEK, 10/pk	51349-03	51349-11
Yellow, PEEK, 10/pk	51349-04	51349-12

Description	1/16" O.D. Part #	1/8" O.D. Part #
Blue, PEEK, 10/pk	51349-05	51349-13
Green, PEEK, 10/pk	51349-06	51349-14
Assorted, PEEK, 12/pk	51349-08	51349-16

Low Pressure, Flange Free Ferrules

Part #	Material	O.D.	Qty.
51350-01	PEEK	1/16" Bore	10/pk
51350-02	PEEK	1/8" Bore	10/pk
51350-03	Kel-F	0.3 mm Bore	10/pk

Part #	Material	O.D.	Qty.
51350-04	Kel-F	0.8 mm Bore	10/pk
51350-05	Kel-F	1/16" Bore	10/pk
51350-06	Kel-F	1/8" Bore	10/pk

Low Pressure Fittings for Flanged Tubing

Part #	Material	O.D., Inch	Color	Qty.
51351-01	Kel-F	1/16	Natural	10/pk
51351-02	Nylon	1/16	Natural	10/pk
51351-03	Nylon	1/16	Green	10/pk
51351-04	Nylon	1/16	Red	10/pk
51351-05	Nylon	1/16	Yellow	10/pk
51351-06	Nylon	1/16	Black	10/pk
51351-07	Nylon	1/16	Blue	10/pk
51351-08	Nylon	1/16	Assorted	12/pk
51351-09	PEEK	1/16	Natural	10/pk
51351-10	PEEK	1/16	Green	10/pk
51351-11	PEEK	1/16"	Red	10/pk

Part #	Material	O.D., Inch	Color	Qty.
51351-12	PEEK	1/16	Yellow	10/pk
51351-13	PEEK	1/16	Black	10/pk
51351-14	PEEK	1/16	Blue	10/pk
51351-15	PEEK	1/16	Assorted	12/pk
51351-24	PEEK	1/8	Natural	10/pk
51351-25	PEEK	1/8	Green	10/pk
51351-26	PEEK	1/8	Red	10/pk
51351-27	PEEK	1/8	Yellow	10/pk
51351-28	PEEK	1/8	Black	10/pk
51351-29	PEEK	1/8	Blue	10/pk
51351-30	PEEK	1/8	Assorted	12/pk

Chromatography Tubing and Fittings

Stainless Steel Washers

Part #	Material	O.D., Inch	Qty.
51351-31	316 SS	1/16	10/pk
51351-32	316 SS	1/8	10/pk

TEFLON® Tubing

Part #	O.D., Inch	I.D., Inch	Length, ft	Color
51221-01	1/16	0.007	10	Clear
51221-02	1/16	0.007	50	Clear
51221-03	1/16	0.010	10	Clear
51221-04	1/16	0.010	50	Clear
51221-05	1/16	0.020	10	Clear
51221-06	1/16	0.020	50	Clear
51221-07	1/16	0.030	10	Clear
51221-08	1/16	0.030	50	Clear
51221-09	1/16	0.040	10	Clear
51221-10	1/16	0.040	50	Clear

Part #	O.D., Inch	I.D., Inch	Length, ft	Color
51221-11	1/8	0.063	10	Clear
51221-12	1/8	0.063	50	Clear
51221-13	1/8	0.100	10	Clear
51221-14	1/8	0.100	50	Clear
51221-15	1/16	0.125	10	Clear
51221-16	1/16	0.125	50	Clear
51221-17*	1/8	1/16	10	Clear
51221-18*	1/8	1/16	50	Clear
51221-19	1/4-28	NO-OX™ Fittings (10 Nuts,10 Ferrules, 10 Inserts), 10/pk		

* NO-OX Tubing™—prevents mobile phase regassing; has extremely low gas permeability (use with NO-OX™ fittings).

PEEK Tubing

O.D., Inch	I.D., Inch	Length, ft	Colors	Part #
1/16	0.005	10	Red	51220-01
1/16	0.005	50	Red	51220-02
1/16	0.007	10	Yellow	51220-03
1/16	0.007	50	Yellow	51220-04
1/16	0.010	10	Blue	51220-05
1/16	0.010	50	Blue	51220-06
1/16	0.020	10	Orange	51220-07
1/16	0.020	50	Orange	51220-08
1/16	0.030	10	Green	51220-09
1/16	0.030	50	Green	51220-10
1/8	0.062	10	Natural	51220-11
1/8	0.062	50	Natural	51220-12
1/8	0.080	10	Natural	51220-13
1/8	0.080	50	Natural	51220-14

Automated and Manual Mini-Inert Valves

Hamilton HV Plug Valves

- Wetted paths are chemically inert TEFLON® and Kel-F® materials
- Valves are for stand alone use or HVX and HVP valves can also be panel mounted
- Valve position is controlled manually via a handle attached to the valve stem
- Valve connections are via 1/4-28 UNF-2B (Unified Fine) fittings

Hamilton (HV) Plug Valves provide an economical and flexible method of custom-building a fluid flow control system, from a simple on/off valve to a more complex multi-valve arrangement, using a combination of loop and distribution valves.

The small valve body with its chemically inert flow path is ideally suited for low pressure applications. All HV Plug Valves allow you to select and interchange a wide variety of fittings, adapters and tubing, including male and female luers, FEP tubing assemblies, and adapters which thread directly into the valve providing an endless variety of valve configurations for any flow application.

Hamilton HV fittings and adapters are installed finger-tight (10 ounce inches) and provide a leak-tight seal tested to 100 psig.

Modular Valve Positioner (MVP)

- Bi-directional valve movement and control
- Versatile serial (RS-232) or digital (TTL) communication
- Easy, "snap-in, snap-out" valve replacement automates any of 24 different Hamilton valve configurations
- Wetted paths are chemically inert TEFLON® and Kel-F® materials

For more information, visit the Hamilton website at **www.hamiltoncompany.com** or call **800-648-5950** to speak with a specialist.

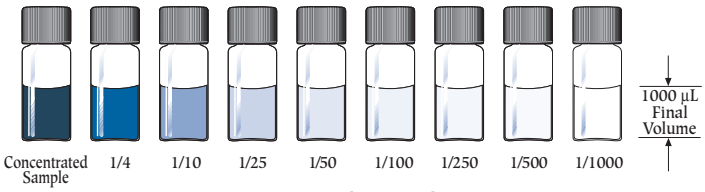
Diluters and Dispensers

MICROLAB® 500 Diluters and Dispensers

ML530B

MICROLAB® 500 Diluters simplify the preparation of sample and standard dilutions. Common dilutions for concentrated out-of-range samples, such as 1/4, 1/10, 1/25, 1/50, 1/100, and greater can be prepared in half the time as compared to manual methods using volumetric flasks.

Plus, due to the accuracy and precision possible with Hamilton syringes, dilutions can be made in small quantities to reduce solvent consumption and waste disposal costs, and to reduce the amount of sample or standard required. For example, sample and standard dilutions for analytical techniques, such as AA/ICP, GC, and HPLC, can be prepared directly into autosampler vials with final volumes as small as 1000 µL. See Figure 1.



Dilution	Solvent Volume	(Diluent) Sample Volume	Final Volume (Diluted Sample)
1/4	750 µL	250 µL	1000 µL
1/10	900 µL	100 µL	1000 µL
1/25	960 µL	40 µL	1000 µL
1/50	980 µL	20 µL	1000 µL
1/100	990 µL	10 µL	1000 µL
1/250	996 µL	4 µL	1000 µL
1/500	998 µL	2 µL	1000 µL
1/1000	999 µL	1 µL	1000 µL

Figure 1: Dilutions with final volumes of 1000 µL made directly into autosampler vials

Single Program Memory, MICROLAB® 500A Series

Model	Part #	Description
ML503A	ML503115	Dual Syringe Diluter, 115VAC
ML503A	ML503220	Dual Syringe Diluter, 220VAC

21 Program Memory, MICROLAB® 500B Series

Model	Part #	Description
ML530B	ML530115	Dual Syringe Diluter, 115VAC
ML530B	ML530220	Dual Syringe Diluter, 220VAC

All MICROLAB® 500A, 500B and 500BP diluters are shipped ready for immediate use.
A user's manual in English is supplied unless another language is requested.

For more information, visit the Hamilton website at **www.hamiltoncompany.com** or call **800-648-5950** to speak with a specialist.

Standard Conditions of Sale

STANDARD CONDITIONS OF SALE (of Hamilton Company, "The Company")

1. GENERAL

All orders are accepted and executed on the understanding that the Purchaser is bound by the following Standard Conditions of Sale. Where there is any inconsistency between these Standard Conditions of Sale and any conditions which the Purchaser seeks to impose, these Standard Conditions of Sale shall prevail.

Any deviations from these Standard Conditions of Sale shall only be binding upon the Company if the latter has expressly agreed thereto in writing.

2. VALIDITY OF QUOTATIONS

The Company reserves the right to refuse the Purchaser's acceptance of a quotation unless such quotation is stated to be open for a specific period and is not withdrawn in such period.

3. PRICES AND DISCOUNTS

The published prices of the Company's Products are those ruling on the date of publication and are subject to alteration without notice. Prices and currency transactions are in U.S.A. dollars.

4. PAYMENT

Unless otherwise agreed by the Company in writing, the goods shall be paid for in cash within 30 days following the date of the relevant invoice. The Company's prices are net and are not subject to any settlement terms.

The Purchaser may not claim any set-off against the Company. In the event of a delay in payment, the Company shall be entitled to claim, without any notice of default being required and without prejudice to any further rights it may have, interest at a rate of one and a half percent (11/2%) per month or at the legal interest rate, whichever is the higher value. All costs of collection shall be fully for the Purchaser's account; extrajudicial costs shall be fixed at ten percent (10%) of the amount owed by the Purchaser and shall be at least fifteen hundred U.S. dollars (USD 1,500.00).

In the event that any payment in respect of Products supplied becomes overdue, the Company may immediately terminate the Purchaser's power of sale under clause 14 of this document and may without prior notice to the Purchaser enter upon the premises of the Purchaser to repossess unpaid goods.

5. NEW ACCOUNTS

Where a credit account is desired, a bank and as many as five trade references may be required. The Company reserves the right not to grant credit to any Purchaser for any reason whatsoever.

6. CARRIAGE

Unless otherwise agreed by the parties, goods are delivered by the Company FOB Reno, Nevada, U.S.A. to the Purchaser's registered office exclusive of duty, insurance, taxes, and VAT. When special delivery arrangements are requested, special rates will be charged.

All delivery times shall be approximate, except if a fixed time of delivery has been specifically agreed to in writing by the Company, in which case a delay in the delivery shall solely entitle the Purchaser to cancel, without costs, the order for the goods not delivered.

7. PACKING

A charge is made when it is necessary to dispatch goods in crates or cases, but this amount will be credited in full on the return, within one month, of the crates or cases in good condition carriage paid. No charge is made for any other form of packing and no credit will be allowed for its return.

8. LOSS OR DAMAGE IN TRANSIT

Clear receipts should be given only if goods have been examined, as an unqualified signature may react to the disadvantage of the Purchaser if the consignment should become the subject of a claim. In the event of short delivery or damage in transit, it is essential that the Company's dispatching depot be advised within two days of receipt of goods.

The following details should be sent in writing to the Company:

a. Advice note number
b. Carrier's name
c. Condition of package
d. Date of consignment received
e. Extent of damage or shortage

In the event of non-delivery, the Company's dispatching depot should be advised within seven (7) days of the date of invoice. The Company will not be responsible for goods lost or damaged in transit unless the above conditions are observed.

9. DELIVERY

The Purchaser shall be obliged to cooperate in the delivery of the Products and to take receipt of same. The Company may keep any goods refused or not accepted by the Purchaser at the latter party's disposal for account and at the risk of the Purchaser.

10. LIABILITY FOR DELAY

Any times quoted for dispatch, delivery, repair, or replacement are to be treated as estimates only and the Company shall not be liable for failure to dispatch, deliver, repair, or replace within such time unless the Purchaser has suffered loss thereby and the amount payable in respect thereof shall have been agreed in writing as liquidated damages, in which case the Company's liability shall be limited to the amount so agreed to be paid.

In all cases, whether a time for dispatch, delivery, repair, or replacement be quoted or not, the time for dispatch, delivery, repair, or replacement shall be extended by a reasonable period if delay in dispatch, delivery, repair, or replacement is caused by instructions or lack of instructions from the Purchaser or by industrial dispute or by any cause whatsoever beyond the Company's reasonable control.

11. DEFAULT

The Company shall have the right to discontinue delivery and also at its discretion to terminate any agreement in respect of any undelivered goods if the Purchaser defaults in payment as stated under clause 4 of this document or in respect of its other obligations to the Company.

12. DEFECTS AFTER DELIVERY

The Company will make good, by repair at the Company's option, or by the supply of replacement, defects, which under proper use, appear in the goods within a period of 12 calendar months after the goods have been delivered and arise solely from faulty design, materials or workmanship; provided that no complaints shall be admissible unless submitted in writing to the Company within five (5) days after the time of discovery of the defect or after the time the defect should have been discovered, whichever time comes first, it being understood that the Purchaser shall take reasonable care to discover any defect of whatever nature as soon as possible after taking delivery.

Provided further that in respect of parts or components not of the Company's manufacture, the Company will give the Purchaser a guarantee equivalent to the guarantee (if any) that the Company may have received from the supplier of such parts or components in respect thereof but not so as to impose on the Company in respect of such parts or components a liability greater than that imposed on it by the aforesaid period of this clause.

Save as aforesaid and as provided in clauses 8 and 10, the Company shall not be under any liability in respect of defects in goods delivered or for any injury, damage, or loss resulting from such defects or from any work done in connection therewith and its liability under this clause shall be in lieu of any warranty or condition implied by law as to the quality of fitness for any particular purpose of such goods.

13. SPECIAL ORDERS

All orders for non-standard products or package quantities not included in current Company catalogues and literature, are considered to be special orders and will be dealt with at the discretion of the Company.

14. RESERVATION OF OWNERSHIP/PASSING OF RISK

Products supplied to the Purchaser by way of sale shall remain the property of the Company until payment in full of all its claims on the Purchaser on whatsoever account has been received by the Company but risk in the same shall pass upon delivery.

The Purchaser acting as bailee shall deal with the goods separately and store according to the agreed methods of storage so that the goods not paid for may be clearly identified and shall not be mixed with other goods.

The Purchaser shall be entitled to pass ownership in unpaid goods to third parties provided that all sums received shall be held for the account of the Company.

15. RETURN OF GOODS

The Company does not accept the return of goods for credit unless it is a justified warranty claim. All returns must be authorized in advance. Unauthorized returns will be refused. In no circumstances may goods supplied against a firm order be returned without the Purchaser having first applied for and obtained both written consent and a Returned Goods Authorization (RGA) number from the Company.

The Company reserves the right to refuse the return of any Product that has been used with infectious, microbiological, or radioactive substances or other materials that may be deemed hazardous to the employees of the Company.

A handling charge amounting to not more than 20 percent of the invoice value of the returned goods may be deducted from any credit allowed where it is established that the reason for their return is not subject to the provision of clause 8 or 12 hereof or through any error on the part of the Company.

Goods approved for return must be received by the Company within 30 (thirty) days of the Company's written consent.

16. DESCRIPTIVE MATTER AND ILLUSTRATIONS

All descriptive and forwarding specifications, drawings, and particulars of weights and dimensions issued by the Company are approximate only, and are intended only to present a general idea of the goods to which they refer and shall not form part of a contract.

17. FORCE MAJEURE

Any party will be excused from performing under a sale agreement or any other agreement of which these Standard Conditions of Sale are part if prevented by an event of force majeure including strike, lockout, or other major trouble affecting labor relations.

If any such event of force majeure should last for more than two (2) consecutive months, any party may elect to terminate this Agreement immediately upon giving a written notice to the other party.

18. PATENTS

In the event of any claim being made or action being brought against the Purchaser in respect of infringement of local patents by the user or sale of goods supplied hereunder, the Purchaser is to notify the Company immediately, and the Company shall be at liberty with the Purchaser's assistance if required, but at the Company's expense, to conduct through the Company's own lawyers and experts all negotiations for the settlement of the same or any litigation that may arise therefrom; subject to such notifications and provided that no such goods, or any part thereof, shall be used for any purpose other than that for which the Company supply them, the Company will indemnify the Purchaser in respect of any such claims.

19. TRADEMARKS

a. The only Hamilton trademarks that the Purchaser may display to advertise and sell the Products shall be those trademarks under which the Products are sold by the Company to the Purchaser hereunder or such other trademarks expressly authorized by the Company (hereinafter called "the said trademarks") and the Purchaser shall comply with the Company's instructions as to the manner and context in which the said trademarks and the statements to accompany them are displayed.
b. No trademarks of the Products shall be undertaken by the Purchaser or any person on the Purchaser's behalf without the Company's prior written consent nor will the Purchaser alter, obliterate, add to, or otherwise interfere with the said trademarks.

20. LEGAL CONSTRUCTION

These Standard Conditions of Sale and all sale contracts to which the same apply shall be construed in accordance with the laws of the State of Nevada, U.S.A, and the authoritative text shall be that in the English language set out herein. Any disputes arising in connection with these Standard Conditions of Sale and all sale contracts to which the same apply shall be finally settled by arbitration in accordance with the laws and rules of the State of Nevada and such proceedings held and located in Reno, Nevada, U.S.A.